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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,740	10/12/2001	Ann M. Lees	10797-004002	2462

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EXAMINER	
MITRA, RITA	

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/976,740	LEES ET AL.	
	Examiner	Art Unit	
	Rita Mitra	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38-104* is/are pending in the application.

4a) Of the above claim(s) *38-45,51-58,62-71,76-80,82-84 and 88-104* is/are withdrawn from consideration.

5)☒ Claim(s) *49 and 50* is/are allowed.

6)☒ Claim(s) *46-48,59-61,72-75 and 81-87* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicants' preliminary amendment filed on October 12, 2001 is acknowledged. Amendment to specification has been entered. Claims 1-37 have been canceled. New claims 38-104 have been added and entered. Therefore claims 38-104 are pending.

Election/Restriction

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 38-41, 56-58, 62-65, 66, 80,.82-84, 99, 101 and 103, drawn to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the polypeptide binds to LDL and at least 80%, or 90% or 95% or 100% identical to the amino acid sequence of SEQ ID NO: 2, or at least 80%, or 90% or 95% identical to a portion of the amino acid sequence of SEQ ID NO: 2, that binds to LDL; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence identical to a fragment of at least 10 or 20 or 30 amino acid residues of SEQ ID NO: 2; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the amino acid sequence binds to LDL and differs by one or more conservative amino acid substitutions from the amino acid sequence of SEQ ID NO: 2 or from the sequence of a fragment of 10 or 20 or 30 amino acid residues of SEQ ID NO:2; a recombinant vector; a cell comprising the recombinant vector; a method of producing polypeptide. Classified in class 536, subclass 23.1, 23.5; class 435, subclass 69.1, 320.1, 252.3, 325, 440, 441.

Should Group I be elected, applicants are required to select SEQ ID NO: 2 from claims 56-58, 80, 82-84, or one sequence from claim 66.

II. Claims 42-45, 56-58, 67-70, 71, 80, 82-84, 100, 102 and 104, drawn to an

isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the polypeptide binds to LDL and at least 80%, or 90% or 95% or 100% identical to the amino acid sequence of SEQ ID NO: 7, or at least 80%, or 90% or 95% identical to a portion of the amino acid sequence of SEQ ID NO: 7, that binds to LDL; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence identical to a fragment of at least 10 or 20 or 30 amino acid residues of SEQ ID NO: 7; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the amino acid sequence binds to LDL and differs by one or more conservative amino acid substitutions from the amino acid sequence of SEQ ID NO: 7 or from the sequence of a fragment of 10 or 20 or 30 amino acid residues of SEQ ID NO: 7; a recombinant vector; a cell comprising the recombinant vector; a method of producing polypeptide. Classified in class 536, subclass 23.1, 23.5; class 435, subclass 69.1, 320.1, 252.3, 325, 440, 441.

Should Group II be elected, applicants are required to select SEQ ID NO: 7 from claims 56-58, 80, 82-84 or one sequence from claim 71.

III. Claims 46-50, 59-61, 72-75, 81, 85-87, drawn to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the polypeptide binds to LDL and at least 80%, or 90% or 95% or 100% identical to the amino acid sequence of SEQ ID NO: 43, or at least 80%, or 90% or 95% identical to a portion of the amino acid sequence of SEQ ID NO: 43, that binds to LDL; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence identical to a fragment of at least 10 or 20 or 30 amino acid residues of SEQ ID NO: 43; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the amino acid sequence binds to LDL and differs by one or more conservative amino acid substitutions from the amino acid sequence of SEQ ID NO: 43 or from the

sequence of a fragment of 10 or 20 or 30 amino acid residues of SEQ ID NO: 43. Classified in class 536, subclass 23.1, 23.5; class 435, subclass 440, 441.

Should Group III be elected, applicants are required to select SEQ ID NO: 43 from claims 59-61, 81 and 85.

IV. Claims 51-55, 59-61,76-79, 81, 85-87, drawn to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the polypeptide binds to LDL and at least 80%, or 90% or 95% or 100% identical to the amino acid sequence of SEQ ID NO: 47, or at least 80%, or 90% or 95% identical to a portion of the amino acid sequence of SEQ ID NO: 47, that binds to LDL; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence identical to a fragment of at least 10 or 20 or 30 amino acid residues of SEQ ID NO: 47; an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence, wherein the amino acid sequence binds to LDL and differs by one or more conservative amino acid substitutions from the amino acid sequence of SEQ ID NO: 47 or from the sequence of a fragment of 10 or 20 or 30 amino acid residues of SEQ ID NO: 47. Classified in class 536, subclass 23.1, 23.5; class 435, subclass 440, 441.

Should Group IV be elected, applicants are required to select SEQ ID NO: 47 from claims 59-61, 81 and 85.

V. Claims 88-92, drawn to an isolated nucleic acid comprising a nucleotide sequence that specifically hybridizes to the sequence of SEQ ID NO: 11, wherein the nucleotide sequence encodes a polypeptide that binds to LDL, wherein the nucleotide sequence is at least 80%, or 95% or 100% identical to the sequence of SEQ ID NO: 11. Classified in class 536, subclass 23.1, 23.5.

Should Group V be elected, applicants are required to select SEQ ID NO: 11 from claims 88, 90, 91 and 92.

VI. Claims 88-92, drawn to an isolated nucleic acid comprising a nucleotide sequence that specifically hybridizes to the sequence of SEQ ID NO: 16, wherein the nucleotide sequence encodes a polypeptide that binds to LDL, wherein the nucleotide sequence is at least 80%, or 95% or 100% identical to the sequence of SEQ ID NO: 16. Classified in class 536, subclass 23.1, 23.5.

Should Group VI be elected, applicants are required to select SEQ ID NO: 16 from claims 88, 90, 91 and 92.

VII. Claims 93-97, drawn to an isolated nucleic acid comprising a nucleotide sequence that specifically hybridizes to the sequence of SEQ ID NO: 45, wherein the nucleotide sequence encodes a polypeptide that binds to LDL, wherein the nucleotide sequence is at least 80%, or 95% or 100% identical to the sequence of SEQ ID NO: 45. Classified in class 536, subclass 23.1, 23.5.

Should Group VII be elected, applicants are required to select SEQ ID NO: 45 from claims 93, 95-97.

VIII. Claims 93-97, drawn to an isolated nucleic acid comprising a nucleotide sequence that specifically hybridizes to the sequence of SEQ ID NO: 48, wherein the nucleotide sequence encodes a polypeptide that binds to LDL, wherein the nucleotide sequence is at least 80%, or 95% or 100% identical to the sequence of SEQ ID NO: 48. Classified in class 536, subclass 23.1, 23.5.

Should Group VII be elected, applicants are required to select SEQ ID NO: 48 from claims 93, 95-97.

IX. Claim 98, drawn to an isolated nucleic acid comprising the nucleotide sequence of SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 36, SEQ ID NO: 37, SEQ ID NO: 38, SEQ ID NO: 39, SEQ ID NO: 30, SEQ ID NO: 31, SEQ ID NO: 32 or SEQ ID NO: 33. Classified in class 536, subclass 23.1, 23.5.

Should Group IX be elected, applicants are required to select one SEQ ID NO: from claim 98.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II/III/IV/V/VI/VII/VIII/IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

Inventions II and III/IV/V/VI/VII/VIII/IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

Inventions III and IV/V/VI/VII/VIII/IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

Inventions IV and V/VI/VII/VIII/IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

Inventions VI and VII/VIII/IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

Inventions VII and VIII/IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

Inventions VIII and IX are related as nucleic acid. However, the nucleic acids differ with respect to their physical, chemical and biological properties. Therefore the inventions are patentably distinct.

The restriction requires for a selection of a single sequence of nucleic acid sequence and the encoded amino acid sequence because each sequence has a different chemical and physical property (See specification pages 8+). For example the polunucleotide sequence encoding the polypeptide having amino acid sequence of human LBP-2 as set forth in SEQ ID NO: 43 (Fig. 7A); while rabbit or human LBP-1 as set forth in SEQ ID NO: 1 (Fig. 1). In addition the

invention also includes fragments and variants, which have different amino acid sequences, which are distinct from each other.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently filed petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(h).

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

During a telephone conversation with Attorney Jack Brennan on March 8, 2004 a provisional election was made with traverse to prosecute the invention of Group III, claims 46-50, 59-61, 72-75, 81, 85-87. The traversal is on the ground(s) that the human LBP-2 polypeptides set forth in SEQ ID NO: 43 (full length), SEQ ID NOs: 7, 19, 20, 21 and 22 (fragments or variants) are related to each other; and human and rabbit LBP-2 polypeptides are highly related, therefore, the prosecution would be facilitated by the simultaneous examination of the human and rabbit LBP-2 polypeptides, fragments, and variants set forth in SEQ ID NO: 47 (full length), SEQ ID NOs: 3, 4 and 25-28. This is not found persuasive because a search of the human LBP-2 claims would not encompass claims to the rabbit LBP-2. Consequently, a search of claims directed to human and rabbit LBP together would constitute an undue burden.

The requirement is still deemed proper and is therefore made **FINAL**.

Affirmation of this election must be made by applicant in replying to this office action. Claims 38-45, 51-58, 62-71, 76-80, 82-84, 88-104 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Therefore, claims 46-50, 59-61, 72-75, 81, 85-87 directed to nucleic acids encoding human LBP-2 polypeptides set forth in SEQ ID NO: 43, are currently pending and are under examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 59-61, 72, 74 and 75 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 59-61 are directed to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence that binds to LDL and is at least 80%, 90% and 95% identical to a portion of the sequence of SEQ ID NO: 43 respectively, which binds to LDL. Claims 72, 74 and 75 are directed to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence identical to a fragment of at least 10 or 20 or 30 amino acid residues of the amino acid sequence of SEQ ID NO: 43, which binds to LDL. The specification while defining the fragments indicates at page 9 that this invention includes a polynucleotide capable of hybridizing to and which is at least 80%, preferably 90%, more preferably 95% or most preferably 98% identical to the polynucleotide sequence encoding the sequence of SEQ ID NO: 43, and wherein the encoded polypeptide is capable of binding to LDL; or a biologically active fragment of said polynucleotide sequence, wherein the encoded polypeptide is capable of binding to LDL. However, the specification fails to demonstrate any fragment of polynucleotide wherein the encoded amino acid sequence has at least 80% identity to a portion of the sequence set forth in SEQ ID NO: 43 (claims 59-61) wherein the encoded polypeptide has LDL binding activity. There is no guidance provided to allow the skilled artisan to predict the portion of the SEQ ID NO: 43 that would have had at least 80% identity to the claimed encoded peptide sequence fragment.

Also the specification fails to describe or provide guidance about the nucleotide sequence that encodes a polypeptide comprising an amino acid sequence having identity to a fragment of at least 10 or 20 or 30 amino acid residues of the encoded polypeptide of SEQ ID NO: 43 (claims 72, 74, 75). It is not clear to a skilled artisan that what is the position of these 10. 20, and 30 amino acids in relation to the amino acid sequence set forth in SEQ ID NO: 43. Although Examples 2, 3, 4 and 5 (pages 40-45) demonstrate the full length cDNA encoding LDL binding protein, this is not demonstrative of any fragments or analogs that are claimed in claims 59-61 and claims 72, 74 and 75. For these reasons it would require undue experimentation to make the claimed invention.

Claims 46-48, 59-61, 72, 73-75, 81, 85-87 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated nucleic acid comprising a sequence that encodes a polypeptide of an amino acid sequence set forth in SEQ ID NO: 43 that binds to low density lipoprotein (LDL); does not reasonably provide enablement for all the LDL binding proteins, and fragments and mutants generated from any position located on the sequence of SEQ ID NO: 43. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The specification, however, only discloses cursory conclusions (see page 8-24) to support the findings. See the discussion below.

In this regard, the application disclosure and claims have been compared per the factors indicated in the decision In re Wands, 8 USPQ2d 1400 (Fed. Cir., 1988) as to undue experimentation. The factors include: 1) the nature of the invention; 2) the breadth of the claims; 3) the predictability or unpredictability of the art; 4) the amount of direction or guidance presented; 5) the presence or absence of working examples; 6) the quantity of experimentation necessary; 7) the state of the prior art; and, 8) the relative skill of those skilled in the art;

Each factor is addressed below on the basis of comparison of the disclosure, the claims and the state of the prior art in the assessment of undue experimentation.

The nature of the invention:

The nature of the invention is defined by the claims, which include an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence of SEQ ID NO: 43, wherein the polypeptide binds to LDL The specification does not describe what might be considered a "LDL binding" variants of the claims 46-48, 59-61 and fragments of the claims 72, 73-75 and mutants of claims 81, 85-87 or provide any example of the same.

The breadth of the claims:

The breadth of the claims is broad and encompasses an unspecified amount of variants regarding the encoded polypeptide of SEQ ID NO: 43 as biological active variants, which are not specifically described or demonstrated in the specification. The scope of the claims includes fragments, variants, analogs and mutants of polypeptide. However the specification does not provide the information on the structure and function of the claimed variants of the said polypeptide The number of changes to result in a sequence with 80% identity to the starting sequence would, of course, be 20 changes per hundred amino acids. The effects on function of this many changes is clearly unpredictable. Finally, these claims are very broad in the sense that a vast number of different proteins fall within the scope of the claims.

The predictability or unpredictability of the art;

The nature of the variation makes it entirely unpredictable what might be considered a variant before the isolation of such a sequence has actually taken place. The effect of one or a few conservative substitutions might be somewhat predictable, if the active areas of the molecule were known, but more changes than that are less predictable.

The amount of direction or guidance presented;

Claims 46-48 directed to an isolated nucleic acid comprising a nucleotide sequence that encodes a polypeptide that binds to LDL and having at least 80% or 90% or 95% or 98% sequence identity to the sequence of SEQ ID NO: 43. However, no biological activities were attributed to the recited variants and the structural information was limited (see specification page 8-9). Claims 59-61 are directed to an isolated nucleic acid comprising a nucleotide

sequence that encodes a polypeptide comprising an amino acid sequence that binds to LDL and is at least 80%, or 90%, or 95% or 98% identical to a portion of the amino acid sequence of SEQ ID NO: 43 respectively which binds to LDL. Specification indicates a list of several fragments at page 8, 9, 11, 12, but fails to provide any activity of those fragments. The specification while defining the analogs indicates at page 17-18 that analogs of the invention exhibit at least 80%, preferably 90%, more preferably 95% or most preferably 98% homology with substantially the entire sequence of a naturally occurring LBP sequence, preferably with a segment of about 100 or 50, or 30, or 10, or 5, or 4, or 3 or 2 amino acid residues. However, the specification fails to demonstrate any analog that has at least 80% identity to a portion of the sequence set forth in SEQ ID NO: 43 (claims 59-61), which have the LDL binding activity. There is no guidance provided to allow the skilled artisan to predict the portion of the SEQ ID NO: 43 that would have had at least 80% identity to the encoded polypeptide sequence fragment. Specification indicates at page 17-18 and in Table 1 that preferred analogs include LBP or biologically active fragments thereof whose sequence differ from the wild type sequence by one or more conservative amino acid substitutions or by one or more non-conservative amino acid substitutions, deletions or insertions which do not abolish LBP biological activity. However, the specification fails to demonstrate a variant, which has LBP biological activity. There is no disclosure about the biological activities of these claimed variants. Identification of the full-length LDL binding polypeptide (Fig. 7A, SEQ ID NO: 43) is described (see specification page 11) and exemplified in the specification (Example 8 and 9 LBP-1, LBP-2 or LBP-3), however specification fails to provide any description or demonstration of a variant of polypeptide of SEQ ID NO: 43 that retains the activity of the full length polypeptide of SEQ ID NO: 43. The amount of guidance presented is limited to the exact sequence. No discussion is present as to where the changes might be made to SEQ ID NO: 41. An example of desirable guidance for a LDL binding protein would be disclosure of the binding domain, which is not present. There is no guidance as to how the functional fragments and variants of the claimed nucleic acid encoding the protein can be generated. The specification has provided no guidance to enable one of ordinary skill in the art to determine, without undue experimentation, the positions in the protein, which are tolerant to change (e.g. by amino acid deletions, insertions or substitutions), and the nature

and extent of changes that can be made in these positions. Although the specification outlines art-recognized procedures for producing and screening for active variants, this is not adequate guidance as to the nature of active variants that may be constructed.

The presence or absence of working examples; and

The quantity of experimentation necessary:

Given the breadth of the claims in the invention, detailed teachings are required to be present in the disclosure in order to enable the skilled artisan to make and use the fragments/variants/analogs of broadly claimed group of encoded LDL binding proteins. Such teachings are absent in the specification. In the instant case, the amount of experimentation is enormous since the number of changes from the specific sequence are large, one of skill in the art would have to make and test each one to determine if it had the LDL binding activity of the parent protein. The specification has disclosed an LDL binding protein having an amino acid sequence of SEQ ID NO: 43. The working examples are exclusively drawn to making one full-length LDL binding protein (LBP-1, LBP-2 or LBP-3) and characterizing cDNAs encoding the full-length protein (Examples1-5, 8, 9), however, the specification does not provide a working Example that demonstrates the claimed variants.

For these reasons, it requires undue experimentation to make the claimed invention, especially where in claims 46-48 and claims 59-61, "80%, 90%, and 95% " or "conservative amino acids substitition" would have been included by the claims and for which the specification does not describe with particularity as to retention of function. Without any guidance or suggestions a skilled artisan would not be able to predict the structure of a variant that would demonstrate the same activity as the activity of the polypeptide sequence of SEQ ID NO: 43. Thus, for the reasons set forth above, undue experimentation is required to make and use the claimed invention in its full scope.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 46-48, 59-61, 73-75, 81 and 85-87 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 46-48 and 59-61 are indefinite because of the use of the term "identical." The term "identical" renders the claim indefinite, it is not clear how 80% or 90% or 95% would be identical to SEQ ID NO: 43. This rejection would overcome by replacing "identical" to " ...and has at least 80% or 90% or 95% or 98% sequence identity to the amino acid..."

Claims 59-61 are indefinite because of the use of the term "portion." The term "portion" renders the claim indefinite, it is not clear which portion of the amino acid sequence of SEQ ID NO: 43, whether it is N-terminal or C-terminal. It is also not clear what is the position of that portion in relation to the sequence of SEQ ID NO: 43.

Claims 46, 59, 73, 81 and 85 are indefinite because of the use of the term "LDL." The fully spelled out words should precede an acronym/abbreviation. Claims 47, 48, 60, 61, 86 and 87 are included in the rejection because they depend upon rejected claims and do not correct the deficiency of the claims from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 72, 73 and 85 are rejected under 35 U.S.C. 102(e) as being anticipated by Colasanti et al. (US Patent 6177614, issue date January 23, 2001, earlier filing date March 16, 1995). The reference teaches the Id (reproductive induction) gene in maize plant, which is similar to that of genes encoding zinc-finger regulatory proteins in animals (see abstract). The peptide sequence of Id protein has a fragment with 10 amino acid having 1.9% sequence identity, and 100% best local similarity to SEQ ID NO: 43 (see alignment result, Database: Issued_Patent_AA, Accession NO: US-09-056-226-2). Colasanti's peptide is considered for the encoded peptide sequence fragment of at least 10 amino acid residues of SEQ ID NO: 43 (claims 72, 85). Colasanti's peptide having the structure of the claimed encoded peptide of instant application considered anticipating the LDL binding of the claimed peptide (73). Therefore, claims 72, 73 and 85 of the instant application are being anticipated by Colasanti et al.

Conclusion

Claims 46-48, 59-61, 72-75 and 81-87 are rejected. Claims 49 and 50 are allowable.

Inquiries

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Rita Mitra whose telephone number is (571) 272-0954. The Examiner can normally be reached from 9:30 a.m. to 6:30 p.m. on weekdays. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Christopher Low, can be reached at (571) 272-0951. Papers related to this application may be submitted to

Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center. The faxing of such papers must conform with the notice published in the Official Gazette,1096 OG 30 (November 15, 1989). The Fax Center number is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-0547.

Rita Mitra, Ph.D.
March 29, 2004

ROBERT A. WAX
PRIMARY EXAMINER